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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,517	01/23/2002	Richard T. Reel	9692-000001	9361

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EXAMINER

REIS, TRAVIS M

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/055,517

Applicant(s)

REEL, RICHARD T.

Examiner

Travis M Reis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 22, 23, 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yeung et al. (U.S. Patent 5324401).

With reference to claims 1, 2, 22, 23, & 26, Yeung et al. disclose a method for detecting the fluorescence of a fluorescent sample in a channel plate (Figure 2) comprising having a channel axis, through which a sample can flow, exciting the fluorescent sample with an excitation beam of light (col. 4 lines 3-4), wherein the excitation beam of light enters the sample at an angle less than or equal to about 45° longitudinal axis of the channel axis displaced from that of the fluorescence image associated with background (col. 8 lines 33-36); and collecting the fluorescence of the sample with a collection optics system (col. 4 lines 26-29), wherein the collection optics system collects the fluorescence and refocuses the fluorescence onto a detector (col. 4 lines 29-32), said detector being a charge couple device (Abstract) with a plurality of detector elements, (col. 3 line 32) determining the signal-to-noise ratio (col. 9 line 48) of a first group of detector elements; determining the signal-to-noise ratio of a second group of detector elements, said second group of detector elements including at least one detector element in said first group of detector elements; comparing the signal-to-noise ratio of the first group of detector elements to the signal-to-noise ratio of said second group of detector elements; and repeating the prior steps with groups of detector elements of increasing number of detector elements until the signal-to-noise ratio of said second group of detector elements declines

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with respect to the signal-to-noise ratio of said first group of detector elements (col. 9 lines 51-67 through col. 10 lines 1-9).

With reference to claims 27 & 28, Yeung et al. disclose an apparatus configured to measure fluorescence of a sample comprising a source (40) operable to illuminate the sample with an excitation beam (Figure 1), said excitation beam having a propagation axis with an incident angle of less than about 45 degrees with respect to a surface of the sample (col. 8 lines 33-36); collection optics (60) operable to collect fluorescence from the sample, said collection optics having an axis which is greater than about 90 degrees with respect to the propagation axis of said excitation beam (Figure 1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4 & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeung et al.

Yeung et al. disclose all of the instant claimed invention as stated above in the rejection of claims 1, 2, 22, 23, 26-28 including that although 45° is preferred, the angle of incident light can be varied (col. 8 lines 55-59).

Yeung et al. do not disclose explicitly that the angle be less than or equal to about 20°. However, to choose an angle less than or equal to about 20°, absent any criticality, is only considered to be the " optimum " value of the excitation angle, as stated above, that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy and since it has been

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held that discovering an optimum value of a result effective variable involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980).

5. Claims 5-7, 9-11, 14, 15, & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeung et al. in view of Van Gelder (U.S. Patent 5424841).

With reference to claims 5 & 6, Yeung et al. disclose all of the instant claimed invention as stated above in the rejection of claims 1, 2, 22, 23, 26-28, but does not disclose the collection optics further removes scattered light from the excitation beam using a long pass filter or a band pass filter.

Van Gelder discloses an apparatus for measuring spatial distribution of fluorescence on a substrate which utilizes both long pass and band pass filters (Abstract). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to add the long pass and band pass filters disclosed by Van Gelder to the collection optics disclosed by Yeung et al. in order to better remove excess wavelengths of light.

With reference to claims 7, 9-11, 15 & 25, Yeung et al. & Van Gelder disclose all of the instant claimed invention as stated above in the rejection of claims 1, 2, 22, 23, 26-28, but do not disclose directing the excitation beam of light substantially parallel to the channel plate into a reflective mirror.

Van Gelder discloses a mirror (26) for directing the excitation beam parallel to the channel plate (Figure 1). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to add the mirror disclosed by Van Gelder to the channel plate disclosed by Yeung et al. in order that the path of the excitation beam could be better controlled.

With reference to claim 14, Yeung et al. & Van Gelder disclose said light source is a laser (40) (Figure 1).

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6. Claims 3, 7-9, 12, 13, & 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeung et al. in view of Hoff et al. (U.S. Patent 5543026).

With reference to claims 3, 16-19, Yeung et al. discloses all of the instant claimed invention as stated above in the rejection of claims 1, 2, 22, 23, & 26-28, including the light source is a laser (40) (Figure 1).

Yeung et al. do not disclose the collection optics system collimates the fluorescence and refocuses the fluorescence onto a detector.

Hoff et al. disclose a real time scanning fluorescence electrophoresis apparatus for the analysis of polynucleotide that uses an aspheric collection lens (74) to collimate light in the direction of the detector to reduce the level of scattered light entering the detector (col. 5 lines 6-8). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to add the aspheric collection lens that collimates light taught by Hoff et al. to the collection optics disclosed by Yeung et al. in order to reduce the level of scattered light.

With reference to claims 7, 8, 12, 20, & 21, Yeung et al. disclose all of the instant claimed invention as stated above in the rejection of claims 1, 2, 22, 22, 23, & 26-28, but do not disclose a reflective mirror, prism, or transmission defraction grading for spectractly separating the fluorescence emission light.

Hoff et al. disclose turning mirrors (68) and that prisms and transmission defraction grading are common components for a detector of this type (col. 4 line 15). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to add the turning mirrors, prism, and transmission defraction grading taught by Hoff et al. to the detector disclosed by Yeung et al. in order to spectractly separate the fluorescence emission light.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kambara et al. discloses a fluorescence detection type electrophoresis apparatus (U.S. Patent 5062942). Heffelfinger et al. discloses a tunable excitation and tunable emission fluorescence imaging (U.S. Patent 5591981). Heffelfinger et al. discloses a tunable excitation and tunable detection microplate reader (U.S. Patent 5784152). Fernandez et al. discloses an apparatus and method for phase fluorometry (U.S. Patent 5818582). Trulson et al. discloses method and apparatus for imaging a sample on a device (U.S. Patent 5834758). Danielzik et al. discloses an integrated optical luminescence sensor (U.S. Patent 6211954). Trulson et al. discloses a method and apparatus for imaging a sample on a device (U.S. Patent 6252236). Groger et al. discloses a modular probe for total internal reflection fluorescence spectroscopy (U.S. Patent 6300638).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis M Reis whose telephone number is (703) 305-4771. The examiner can normally be reached on 8:00--5:00 M--F. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8160 for regular communications and (703) 308-7722 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Travis M Reis
Examiner
Art Unit 2859
March 21, 2003

Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800